

REMARKS/ARGUMENT

The examiner has requested restriction of the above identified application between two (2) species, asserting that each species is patentably distinct from the other, namely between the species of square configuration spacer and the species of hexagonal configuration spacer.

The applicant hereby elects (without prejudice to the right to file any divisional application) the invention of species of hexagonal configuration spacer; claims 1 to 8, 10 to 12, 16 to 21, 23, 27 to 32 are readable thereon.

By the present the applicant wishes to make a number of editorial amendments to the specification.

Thus the applicant wishes to add new claims 8 to 32 comprising new independent claims 8 and 18. New claims 8 and 18, are based on original claim 1; the modifications in relation to these claims (i.e. the additions in relation to claim 1) are shown as underlined passages in Annex A attached herewith.

Support for the new claims may be found as follows:

Claim 8:

- page 4, line 25; page 20 lines 17 -21; fig. 17, 18, ; page 21 lines 14 -35;

Claim 9:

- original claim 4;

Claim 10:

- original claim 5;

Claim 11:

- original claim 6;

Claim 12:

- original claim 6; fig. 7; figs. 13 to 13d and fig. 14;

Claims 13, 14 and 15:

- (see above for claims 11 and 12);

Claim 16 and 17:

- claim 2; page 5 line 37 to 41;

Claim 18:

- page 4 line 25; figure 7; page 16 line 17 to page 17 line 19; figs. 15, 15a and 16;

page 20 line 18 -33;

Claim 19:

- original claim 2; page 5 line 33 – 40;

Claim 20:

-(same as for claim 18 and) fig. 3; page 11 line 5 - 22; fig 7; page 11 line 25; page 14 line 25 to page 15 line 17; page 16 line 30 to page 17 line 36;

Claim 21:

- (see claim 8 above)

Claim 22:

- original claim 4:

Claim 23:

- original claim 5

Claim 24, 25 and 26:

- (see claim 11 and 12 above)

Claim 27:

- (see claim 18 and 20 as well as);

Claim 28 and 29:

- (see claim 11 and 12 above); and

Claim 30, 31 and 32:

- see original claim 7.

In view of the additional claim sheets being added, the applicant wishes to renumber the abstract sheet to reflect this addition.

The applicant also wishes to make a number of clerical corrections to pages 10, 11 and 21; the amendments are outlined in red on attached copies of these pages as initially filed. In respect of page 11, the applicant wishes to correct the line 10 thereof to refer to major side 20 (please see line 8 on page 11). In respect of page 11, the applicant also wishes to correct line 22 to refer to first and second elements 26 and 28 (please see line 16 on page 11). In respect of page 21 the applicant wishes to correct lines 10 and 12 to refer to figs. 17 and 18 (see line 14 on page 21 as well as figs 17 and 18).

As mentioned above, the applicant has by separate letter petitioned for a two (2) month extension of time within which to respond to the outstanding Office Letter, namely up to and including July 6, 2006.

If any further extension of time is necessary, the United States Patent and Trademark Office is hereby petitioned for such an extension and may charge any necessary fees to our **Deposit Account no. 02-3980.**

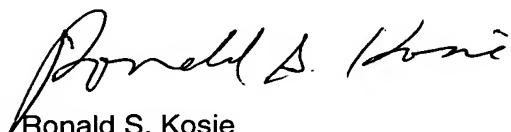
The U.S. Patent and Trademark Office is hereby authorized to charge the amount of \$800.00 to our **Deposit Account no. 02-3980** in payment of the additional twelve (12) claims and for the fourth independent claim.

If any further fee, **whatsoever**, with respect to the present application is due, the United States Patent and Trademark Office is in any event hereby authorized to charge such further amount to our **Deposit Account no. 02-3980.**

In light of the foregoing amendments and comments, favourable reconsideration is respectfully requested.

Respectfully submitted,

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Encls Confirmation receipt post card
Annex A
Pages 10, 11 and 21 with amendments generally in red

ANNEX A: new claims 8 and 18, based on old claim 1, wherein modifications to claim 1 (i.e. the additions in relation to claim 1) are underlined

8. A unitary stackable energy transfer core spacer comprising a peripheral frame member,
said peripheral frame member extending about and defining a framed core opening,
said peripheral frame member having a pair of opposed major sides,
said peripheral frame member comprising
a pair of side opening components
and
a pair of side wall components,
each side opening component comprising a framed side opening in air communication with said framed core opening,
each side wall component respectively interconnecting said side opening components,
said spacer being configured such that said spacer may be oriented and stacked, major side to major side, on top of a second like spacer, with an intermediate air to air energy transfer sheet extending across the framed core openings and being sandwiched between the frame members of both spacers so that the spacers and the energy transfer sheet define a pair of transversely oriented air paths on opposite sides of the energy transfer sheet, each air path extending from one respective framed side opening through a respective framed core opening to the other respective framed side opening of a respective spacer
and
wherein said spacer further comprises snap lock connector elements for interlocking the spacer with said second like spacer.

18. A unitary stackable energy transfer core spacer comprising a peripheral frame member,
said peripheral frame member extending about and defining a framed core opening,
said peripheral frame member having a pair of opposed major sides,
said peripheral frame member comprising
a pair of side opening components
and
a pair of side wall components,
each side opening component comprising a framed side opening in air communication with said framed core opening,
each side wall component respectively interconnecting said side opening components,
said spacer being configured such that said spacer may be oriented and stacked, major side to major side, on top of a second like spacer, with an intermediate air to air energy transfer sheet extending across the framed core openings and being sandwiched between the frame members of both spacers so that the spacers and the energy transfer sheet define a pair of transversely oriented air paths on opposite sides of the energy transfer sheet, each air path extending from one respective framed side opening through a respective framed core opening to the other respective framed side opening of a respective spacer
and
wherein each side opening component comprises a first frame element and a second frame element, said first frame element and said second frame element being associated with a respective major side of the frame member, being spaced apart by a respective framed side opening and being offset with respect to each other such that one frame element does not overly the other frame element.

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Figure 16a is an enlarged view of the portion of figure 15 designated B;

Figure 17 is an enlarged view of an edge portion of a further example spacer showing snap means for interlocking adjacent spacers together at the edge portions thereof; and

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Figure 18 is an enlarged view of an edge portion of another example spacer showing another type of snap means for interlocking adjacent spacers together at the edge portions thereof;

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Figure 1 is illustrative of air flow through a cross flow core; e.g. a square core or the like. In this configuration, two separate and unmixed airstreams are disposed at a 90° angle. Thus, a hot airflow (one arrow being designated by the reference number 1) is shown as crossing a pair of faces (both generally designated by the reference numeral 2) while the cold airflow (one arrow being designated by the reference number 4) is shown as crossing the other pair of faces (both generally designated by the reference numeral 6). This configuration is very compact, but efficiency is theoretically limited.

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Figure 2 is illustrative of air flow through a counter flow core. In this configuration, two separate and unmixed airstreams are disposed at a 180° angle. Thus, a hot airflow (one arrow being designated by the reference number 8) is shown as crossing a pair of faces (both generally designated by the reference numeral 10) while the cold airflow (one arrow being designated by the reference number 12) is shown as crossing the other pair of faces (both generally designated by the reference numeral 14). This arrangement is the best on the efficiency side, but more space is required. This is caused by the fact that two different airflows cannot get into the core by opposed faces. An inlet / exhaust region is required at each end of the core to separate hot and cold airflows.

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Turning now to figures 3 to 6, for the purpose of illustration the stackable spacer shown in figures 3 to 6 has a frame member of somewhat exaggerated proportions in relation to the frame members shown with respect to the spacers illustrated in figures 7, 13 and 14; as may be appreciated in the latter figures the frame members have a stick like aspect, i.e. a relatively thin aspect. The stackable spacer may be incorporated into an energy recovery core as shall be described below.

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Referring to figure 3, the spacer 15 comprises a peripheral frame member 16 of square

5 configuration. The frame member 16 also has a first major side (generally designated by the
reference numeral 18) and an opposed second major side (generally designated by the
reference numeral 20). The peripheral frame member 16 extends about and defines a
framed core opening 22, i.e. the frame member 16 is disposed about the periphery of the
framed core opening 22. In other words the framed core opening 22 extends from one major
10 side 18 to the other major side ~~22~~²⁰ of the frame member 16. The peripheral frame member 16
comprises a pair of side opening components 23 and a pair of side wall components 24. Each
side opening component 23 comprises a first element 26 and a second element 28 associated
with a respective major side of the frame member 16. Thus the first elements 26 are
associated with the major side designated by the reference numeral 18 and the second
15 elements 28 are associated with the major side designated by the reference numeral 20.
These first and second elements (26 and 28) are spaced apart so as to define a framed side
opening 30. Each framed side opening 30 is in fluid (i.e. air) communication with the
framed core opening 22, i.e. air may pass through one of the framed side openings 26 into
the framed core opening 22 and then through the other framed side opening 26 as illustrated
20 by arrow 32. Each side wall component 24 (i.e. imperforate wall members) respectively
interconnects the side opening components, i.e. each pair of the shown first and second
elements ~~26~~²⁶ and ~~28~~²⁸ is connected to both of the side wall components 24.

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On each major side of the frame member 16, the frame member 16 has a peripheral square
25 ring engagement surface. The engagement surface associated with the major side 18 as seen,
has a portion thereof defined by each of the side wall components 24 and the first elements
26; similarly for the square ring surface associated with the other opposite major side 20
(hidden from view) has a portion thereof defined by each of the side wall components 24 and
the second elements 28. Although each portion of the engagement surface on major side 18
30 is shown with an essentially flat engagement surface, the surfaces may alternatively take on
any other suitable aspect. They may for example take on a tongue and mortise aspect as
discussed herein. In any event, as shall be further discussed below, the opposed engagement
surfaces are both configured for engaging in sandwich fashion an air to air energy transfer
sheet extending across the framed core opening 22. The engagement may, for example, be
35 facilitated either through the use of a suitable adhesive material or by any suitable means for
urging the spacers together in a mechanical pinching or clamping action about the exchanger
sheet; the engagement is advantageously such that the energy transfer sheet may act as a
kind of gasket so as to provide an air tight joint between adjacent engagement surfaces. If an
adhesive is used it may be applied between one or both of the square ring engagement
40 surfaces and a sandwiched energy transfer sheet.

5 assembled core have air cross flow structure in the direction of the arrows shown with respect to figure 15.

For those spacers as shown in figures 7, 13 and 14 which comprise one or more rib air guide elements disposed in the framed core opening, said rib air guide elements being connected
10 to the frame member, the rib air guide elements may merely rest up against the adjacent air to air heat transfer sheet, i.e. they are not attached to nor integral with the air to air heat transfer sheet.

Referring to figures 17 and 18, as mentioned above frame members of a core may be
15 provided with snap lock connector elements. Figure ~~17~~ illustrates a male and female approach to such connectors, i.e. a male element 162 is configured and disposed so as to be able to snap lock with the appropriately configured female element 164. Figure ~~18~~ shows a snap hook type mechanism wherein respective resilient hook members 166 of adjacent
20 spacers are able to cam over each other and then inter-hook each other.

Thus for example with respect to a snap lock means as shown in figure 17, a snap lock connector assembly may for example comprise an elongate male member snap lockable with a female member. One of such snap lock members may be associated with one major side of a frame member and the other being associated with the other side of the frame
25 member. The elongate male member may have a generally bulbous outer end and a longitudinally extending intermediate portion attached to the frame member and being of smaller transverse cross-sectional dimensions than said bulbous outer end. The female member may also be connected to the frame member (on the other side thereof) and have an elongated, internal passageway having an opening of slightly smaller dimensions than the
30 bulbous outer end of the male member. The female member may also have a longitudinally extending generally non-flexible portion of slightly larger inner dimensions than said bulbous outer end of said male member. One of said male and female members may comprise flexible, resilient material. The snap lock is effected by forcing the male bulbous outer end into the internal passageway of the female member; once inside the internal passageway the
35 smaller opening of the female member will tend to lock the members together.